WHAT IS CLAIMED IS:

1. A method for adapting a digital subscriber line (DSL) communications duplexing ratio to meet user application needs, comprising the steps of:

determining, for a new DSL loop communication, a required upstream bit rate and a required downstream bit rate for the user application;

dividing the required upstream bit rate by the required downstream bit rate to obtain a desired duplexing ratio for the new DSL communication; and

adapting a duplexing ratio implemented by a DSL modem in support of the new DSL loop communication to at least approximate the desired duplexing ratio.

2. The method as in claim 1 wherein the step of adapting the duplexing ratio comprises the step of adjusting analog filters to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication.

3. The method as in claim 1 wherein the step of adapting the duplexing ratio comprises the step of adjusting digital filters to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication.

4. The method as in claim 1 wherein the step of determining further comprises the step of removing unnecessary idle ATM cells, and the required upstream/downstream bit rate for the new DSL loop communication is a bit rate needed for the new DSL loop communication without inclusion of unnecessary idle ATM cells.

5. The method as in claim 1 wherein the implemented duplexing ratio defines a total available upstream bandwidth and a total available downstream bandwidth for the new DSL loop communication on a certain DSL loop.

6. The method as in claim 5 wherein the required upstream bit rate of the new DSL loop communication corresponds to a required upstream bandwidth that is smaller than the total available upstream bandwidth, the method further comprising the steps of:

calculating, for a plurality of location positions of the required upstream bandwidth for the new DSL loop communication within the corresponding total available upstream bandwidth, a crosstalk noise effect with respect to other active DSL loops in a same cable bundle; and

choosing a location position for the required upstream bandwidth to carry the new DSL loop communication within the total available upstream bandwidth where the calculated crosstalk noise effect with respect to any other active DSL loops is minimized.

7. The method as in claim 5 wherein the required downstream bit rate of the new DSL loop communication corresponds to a required downstream bandwidth that is smaller than the total available downstream bandwidth, the method further comprising the steps of:

calculating, for a plurality of location positions of the required downstream bandwidth for the new DSL loop communication within the corresponding total available downstream bandwidth, a crosstalk noise effect with respect to other active DSL loops in a same cable bundle; and

choosing a location position for the required downstream bandwidth to carry the new DSL loop communication within the total available downstream bandwidth where the calculated crosstalk noise effect with respect to any other active DSL loops is minimized.

8. The method as in claim 5 further comprising execution of the steps of both claims 6 and 7 to minimize both upstream and downstream crosstalk noise.

9. The method as in claim 8 wherein the steps of calculating further include the step of sliding the required upstream/downstream bandwidth across the total available upstream/downstream bandwidth at the plurality of location positions for which crosstalk noise effect is calculated.

10. The method as in claim 8 wherein the crosstalk noise effect is near-end crosstalk (NEXT) noise effect.

11. The method as in claim 8 wherein the calculated crosstalk noise effect is an estimation calculated effect.

12. The method as in claim 8 wherein the calculated crosstalk noise effect is an analytically calculated effect.

13. The method as in claim 1 wherein the DSL modem is selectively configurable to implement any one of a plurality of discrete duplexing ratios, the step of adapting further comprising the step of selecting a certain

one of the discrete duplexing ratios that most closely meets the desired duplexing ratio.

14. The method as in claim 1 further including the steps of:

monitoring noise on subcarriers used to implement the duplexing ratio for the new DSL loop communication;

testing if the monitored noise exceeds a threshold on any of the subcarriers; and

if so, abandoning the subcarrier.

15. The method as in claim 1 further including the step of cancelling echoes when upstream and downstream are overlapped in the adapted duplexing ratio.

16. Apparatus for adapting a digital subscriber line (DSL) communications duplexing ratio to meet user application needs, comprising:

means for determining, for a new DSL loop communication, a required upstream bit rate and a required downstream bit rate for the user application, the required upstream bit rate being divided by the required downstream bit rate to obtain a desired duplexing ratio for the new DSL communication; and

means for adapting a duplexing ratio implemented by a DSL modem in support of the new DSL loop communication to at least approximate the desired duplexing ratio.

17. The apparatus as in claim 16 wherein the means for adapting the duplexing ratio operates to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication.

18. The apparatus as in claim 16 wherein the means for adapting the duplexing ratio is operable to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication.

19. The apparatus as in claim 16 wherein the means for determining operates to remove unnecessary idle ATM cells, and the required upstream/downstream bit rate for the new DSL loop communication is a bit rate needed for the new DSL loop communication without inclusion of unnecessary idle ATM cells.

20. The apparatus as in claim 16 wherein the implemented duplexing ratio defines a total available upstream bandwidth and a total available downstream bandwidth for the new DSL loop communication on a certain DSL loop.

21. The apparatus as in claim 20 wherein the required upstream bit rate of the new DSL loop communication corresponds to a required upstream bandwidth that is smaller than the total available upstream bandwidth, the apparatus further comprising:

means for calculating, for a plurality of location positions of the required upstream bandwidth for the new DSL loop communication within the corresponding total available upstream bandwidth, a crosstalk noise effect with respect to other active DSL loops in a same cable bundle; and

means for choosing a location position for the required upstream bandwidth to carry the new DSL loop communication within the total available upstream bandwidth where the calculated crosstalk noise effect with respect to any other active DSL loops is minimized.

22. The apparatus as in claim 20 wherein the required downstream bit rate of the new DSL loop communication corresponds to a required downstream bandwidth that is smaller than the total available downstream bandwidth, the apparatus further comprising:

means for calculating, for a plurality of location positions of the required downstream bandwidth for the new DSL loop communication within the corresponding total available downstream bandwidth, a crosstalk noise effect with respect to other active DSL loops in a same cable bundle; and

means for choosing a location position for the required downstream bandwidth to carry the new DSL loop communication within the total available downstream bandwidth where the calculated crosstalk noise effect with respect to any other active DSL loops is minimized.

23. The apparatus as in claim 20 further comprising the recited means of both claims 21 and 22 operable to minimize both upstream and downstream crosstalk noise.

24. The apparatus as in claim 23 wherein the means for calculating operates to slide the required upstream/downstream bandwidth across the total available upstream/downstream bandwidth at the plurality of location positions for which crosstalk noise effect is calculated.

25. The apparatus as in claim 23 wherein the crosstalk noise effect is near-end crosstalk (NEXT) noise effect.

26. The apparatus as in claim 22 wherein the calculated crosstalk noise effect is an estimation calculated effect.

27. The apparatus as in claim 23 wherein the calculated crosstalk noise effect is an analytically calculated effect.

28. The apparatus as in claim 16 wherein the DSL modem is selectively configurable to implement any one of a plurality of discrete duplexing ratios, the means for adapting further operates to select a certain one of the

discrete duplexing ratios that most closely meets the desired duplexing ratio.

29. The apparatus as in claim 16 further including:

means for monitoring noise on subcarriers used to implement the duplexing ratio for the new DSL loop communication;

means for testing if the monitored noise exceeds a threshold on any of the subcarriers; and

means responsive thereto for abandoning the subcarrier.

30. The apparatus as in claim 16 further including an echo canceler operable to cancel echoes when upstream and downstream are overlapped in the adapted duplexing ratio.

31. A digital subscriber line (DSL) transceiver connected to a certain loop in a cable bundle, comprising:

an idle cell removal machine that is operable to determine for a new DSL loop communication on the certain loop a required upstream bit rate and a required downstream bit rate for a user application, the required upstream bit rate being divided by the required downstream bit rate to obtain a desired duplexing ratio for the new DSL communication;

a duplexing controller operable to adapt a duplexing ratio implemented in support of the new DSL loop communication to at least approximate the desired duplexing ratio.

32. The transceiver as in claim 31 wherein the duplexing controller implements any one of a plurality of discrete duplexing ratios, the duplexing controller being further operable to select a certain one of the discrete duplexing ratios that most closely meets the desired duplexing ratio.

33. The transceiver as in claim 31 further including analog filters that are adjustable to alter an upstream and downstream bandwidth used for the new DSL loop communication.

34. The transceiver as in claim 31 further including digital filters that are adjustable to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication.

35. The transceiver as in claim 31 wherein the idle cell removal machine further operates to remove unnecessary idle ATM cells, and the required upstream/downstream bit rate for the new DSL loop communication is a bit rate needed for data communication over the certain loop without inclusion of unnecessary idle ATM cells.

36. The transceiver as in claim 31 wherein the implemented duplexing ratio defines a total available upstream bandwidth and a total available downstream bandwidth for the new DSL loop communication on a certain DSL loop.

37. The transceiver as in claim 36 wherein the required upstream bit rate of the new DSL loop communication corresponds to a required upstream bandwidth that is smaller than the total available upstream bandwidth, the transceiver further comprising:

a bandwidth control algorithm for calculating, for a plurality of location positions of the required upstream bandwidth for the new DSL loop communication within the corresponding total available upstream bandwidth, a crosstalk noise effect with respect to other active DSL loops in a same cable bundle; and

a noise minimization algorithm for choosing a location position for the required upstream bandwidth to carry the new DSL loop communication within the total available upstream bandwidth where the calculated crosstalk noise effect with respect to any other active DSL loops is minimized.

38. The transceiver as in claim 36 wherein the required downstream bit rate of the new DSL loop communication corresponds to a required downstream bandwidth that is smaller than the total available downstream bandwidth, the transceiver further comprising:

a bandwidth control algorithm for calculating, for a plurality of location positions of the required downstream bandwidth for the new DSL loop communication within the corresponding total available downstream bandwidth, a crosstalk noise effect with respect to other active DSL loops in a same cable bundle; and

a noise minimization algorithm for choosing a location position for the required downstream bandwidth to carry the new DSL loop communication within the total available downstream bandwidth where the calculated crosstalk noise effect with respect to any other active DSL loops is minimized.

39. The transceiver as in claim 36 further operable to minimize both upstream and downstream crosstalk noise.

40. The transceiver as in claim 39 wherein the noise minimization algorithm operates to slide the required upstream/downstream bandwidth across the total available upstream/downstream bandwidth at the plurality of location positions for which crosstalk noise effect is calculated.

41. The transceiver as in claim 39 wherein the crosstalk noise effect is near-end crosstalk (NEXT) noise effect.

42. The transceiver as in claim 39 wherein the calculated crosstalk noise effect is an estimation calculated effect.

43. The transceiver as in claim 39 wherein the calculated crosstalk noise effect is an analytically calculated effect.

44. The transceiver as in claim 31 further including a bandwidth manager operable to monitor noise on subcarriers used to implement the duplexing ratio for the new DSL loop communication, test if the monitored noise exceeds a threshold on any of the subcarriers, and abandon the subcarrier if the noise exceeds the threshold.

45. The transceiver as in claim 31 further including an echo canceler operable to cancel echoes when upstream and downstream are overlapped in the adapted duplexing ratio.

46. The transceiver as in claim 45 wherein the echo canceler is designed to operate at a maximum overlapping bandwidth between the upstream and the downstream.